

relating to iron are satisfactory. The author has described the recent improvements made with a view to supersede manual labour in puddling—such as the rotative furnaces of Siemens and Danks. Siemens' process for the production of wrought iron direct from the ore is also given, and the excellent researches of Bell, Snelus, and Dr. W. M. Watts are duly noticed. In the rest of the book, the metallurgy of tin, antimony, arsenic, bismuth, and platinum are somewhat briefly treated. The various processes are illustrated by fifty-nine well-chosen engravings.

The book contains some curious verbal errors; but, viewed as a whole, we have no hesitation in saying that the work is good, and may be recommended to the class of readers for whom it is intended.

LETTERS TO THE EDITOR

[The Editor does not hold himself responsible for opinions expressed by his correspondents. No notice is taken of anonymous communications.]

Fossils in Trap

THE occurrence of fossils in the volcanic rocks of our Scottish carboniferous series is by no means uncommon. A conspicuous example was described by me in the "Transactions of the Geological Society of Glasgow," vol. ii. p. 97.

The plant remains thence derived were afterwards figured and described by Mr. Binnie of Manchester, and Mr. Carruthers of the British Museum, and in the latter institution are deposited large polished slabs of entire trees, together with specimens of the enclosing rock.

At a later period a tooth of *Ctenodus cristatus* was also discovered in the same beds. The analysis of the rock was made by the late Mr. John Wallace Young, and given by him in the *Chemical News*, vol. xiii. p. 73.

The rock enclosing these remains is so heavy and compact, so completely devoid of any signs of stratification when fractured, that all previous investigators, from Prof. Buckland in 1819, down to Dr. Bryce in 1865, dismissed it with a conclusive click of the hammer as a *trap rock* not likely to contain fossils.

The condition in which the fossils are found may be described in the precise words of your Nova Scotia correspondent (NATURE, vol. x. p. 398), as "*indissolubly united with trap*;" nevertheless, there is every probability that, originally the enveloping matrix must have reached the fossils in the shape of volcanic ash, or, more likely still, in the shape of a thick fluid sediment enveloping the trunks of the trees as they stood erect, with their broken branches, leaves, and fruit scattered around them. We have numerous instances of ash-beds overlying limestone beds containing corals, and I suspect Mr. Honeyman's "*trap rock in a fluid state*" would resolve itself into a rock of the nature above indicated; at all events, it would be very interesting to geologists on this side to receive specimens for closer examination. With regard to the possibility of fossils being enclosed and preserved in fluid lava, I may mention that when at Catania in 1867, I was informed by Fr. Sylvestri that oak trees on Mount Etna when overtaken by lava streams are not actually annihilated, but the lava forms a sort of hollow cylinder around the trees, in which they are carbonised, and the silex contained in the wood collects in a fused mass at the bottom of the trunk. Such fused masses I met with at the foot of some of the stems of trees excavated by me at Arran, and numerous pebbles, evidently derived from the same source, are to be picked up on the shore between the Fallen Rocks and the Scriden at the north end of Arran.

E. A. WÜNSCH

Loch Ranza, Arran, Sept. 19

Chrysomela Banksii

IN answer to Mr. Moggridge (NATURE, vol. x. p. 355), his conjecture as to *Chrysomela Banksii* is correct; though whether the fluid it emits is irritating or not I cannot say. It is a habit possessed by the allied generæ *Linæ* and *Timarchæ*.

Camberwell Road, Sept. 16

H. POWER

Meteor

THE following is an account of a brilliant meteor which appeared at 8.53 P.M. on Wednesday, Sept. 16:—

Size: about four times that of Jupiter.

Colour: blue, with a red tail.

Brightness: throwing a shadow deeper than that of a full moon.

Angular measurement of tail: from 12° to 15°.

Duration: about 15".

Direction of course: N.W.

Zenith distance of point of disappearance: 75°.

The brilliancy of the tail threw a red light on the surrounding landscape.

G. H. HOPKINS

Bisterne Close, Burley, Hants, Sept. 16

THE INTERNATIONAL CONGRESS OF ORIENTALISTS

THE second meeting of students of Oriental Literature and Science has been brought to a successful termination under the presidency of Dr. Samuel Birch, Keeper of the Oriental Antiquities in the British Museum. On Monday, the 14th inst., the Congress was opened at the Royal Institution, 21, Albemarle Street, when the president delivered a brilliant and highly interesting address upon the scope and value of these annual meetings.

"Our century," said Dr. Birch, "has seen a striking revival of Orientalism, and the discoveries in Mesopotamia, Egypt, India, and Persia have brought again into light, ancient and almost forgotten monarchies, religions, and tongues, as they existed 4,000 years ago. Modern travellers have left no accessible monument uncopied, and immense material is now at the student's disposal—for the first time, a contemporary history of recorded events in these old times. In Egypt only the other day, M. Mariette discovered fresh inscriptions at Karnak recording the conquest of Thothmes III. These enabled him, in a paper just read before the French Academy of Inscriptions, to propose important reforms in our Egyptian geography. Mr. George Smith's excavations at Kouyunjik have brought to light new Assyrian texts; whilst in India, General Cunningham's labours promise very important results. Every facility should be given for excavations in the East, especially for such as follow up the hints afforded by monumental information. Two monumental discoveries made in recent times are of supreme importance, namely the Canopus triglyph tablet and a bilingual inscription of Dali, 'Idalium,' in Cyprus. The Canopus stele has proved beyond a doubt, if doubt still lingered in dark corners, the truth of the decipherment of the hieroglyphs, whilst the Dali text has led to the recovery of the old Cyprian language, which turns out to be of Greek form. The Mesopotamian and Egyptian monumental discoveries make us acquainted with old submerged empires, and the Moabite stone is the most ancient document of alphabetic writing."

On Tuesday the second day's work commenced with the president's reception in the Egyptian and Oriental Department of the British Museum. The meeting of the Semitic Section, under the presidency of Sir Henry Rawlinson, took place in the theatre of the Royal Institution, where the learned Assyriologist delivered his opening address, in which he spoke on the great importance of the Semitic group of languages.

On the conclusion of this address Prof. Jules Oppert, in a lengthy speech delivered in French, brought before the meeting the result of his labours upon the second of the three inscriptions of King Darius at Behistun.

On Wednesday, after an entertainment by the Right Hon. Sir Bartle Frere, and a reception at Kew Gardens by Dr. Hooker, in his capacity as President of the Royal Society, the Turanian Section opened its session at King's College, under the presidency of Sir Walter Elliot. After his address a very interesting paper was read "On the Study of Turanian Languages," by Prof. Hunfalvy, of Hungary. In this paper the Professor showed

by numerous facts adduced from Hungarian, Wogul, Ostiak, and Finnish, that the established notion of Turanianism seems not to be well founded, and that by the accepted maxims it leads the student into many errors. The author endeavoured to show, consequently, that the same method of studying, which has created the Aryan and Semitic linguistic science, must also be applied to the Turanian languages, and that before such a perfect scientific method is reached, every comparative study of them must be unavailing.

Perhaps the most interesting paper was entitled "The State of the Chinese Language at the time of the invention of Writing," by Rev. J. Edkins, in which the author treated of the state of opinion as to the time of the invention of Chinese writing, the changes in the language during the last 1,200 years, and from the time of Confucius till A.D. 600; and laid down the theory that the Chinese characters are an index to the sound of the words at the time of the invention, and that from them may be learned the phonetic changes that have since taken place; they are also an index to the nature and extent of the vocabulary then in use, and a measure of the civilisation that had then been attained.

On Tuesday, the 17th, the Aryan Section sat at the Royal Institution under the presidency of Prof. Müller, whose address was listened to with absorbing interest; we have only space for a few extracts.

What is the real use of an International Congress of Orientalists? asked the president. During the last hundred, and still more during the last fifty years, Oriental studies have contributed more than any other branch of scientific research to change, to purify, to clear, to intensify the intellectual atmosphere of Europe, and to widen our horizon in all that pertained to the science of man, in history, philology, theology, and philosophy. The East, formerly a land of dreams, of fables and fairies, has become a land of unmistakable reality; the curtain between the West and the East has been lifted, and their old forgotten home stands before them again in bright colours and definite outline. Before all, a study of the East has taught the same lesson which the northern nations once learnt in Rome and Athens, that there are other worlds beside our own, that there are other religions, other mythologies, other laws, and that the history of philosophy from Thales to Schlegel is not the whole history of human thought. In all these subjects the East had supplied parallels, and all that was implied in parallels, viz., the possibility of comparing, measuring, and understanding. The comparative spirit was the truly scientific spirit of the age, nay, of all ages. An empirical acquaintance with single facts did not constitute knowledge in the true sense of the word. He advocated the founding of chairs in our Universities for the languages and antiquities of various extinct and existing peoples, and spoke of the great service which properly educated missionaries might render as pioneers of scientific research. What I should like to see is this, he said: I should like to see ten or twenty of our non-resident fellowships, which at present are doing more harm than good, assigned to missionary work, to be given to young men who have taken their degree, and who, whether laymen or clergymen, are willing to work as assistant missionaries on distant stations; with the distinct understanding that they should devote some of their time to scientific work, whether the study of languages, or flowers, or stars, and that they should send home every year some account of their labours. These men would be like scientific consuls, to whom students at home might apply for information and help. Thirdly, Prof. Müller continued, I think that Oriental studies have a claim on the colonies and the colonial governments. The English colonies are scattered all over the globe, and many of them in localities where an immense deal of useful scientific work might be done, and would be done with the slightest encouragement from the local authorities, and something like a systematic supervision on the part of the Colonial Office at home. Now, we should bear in mind that at the present moment some of the tribes living in or near the English colonies in Australia, Polynesia, Africa, and America, are actually dying out, their languages are disappearing, their customs, traditions, and religions will soon be completely swept away. To the student of language the dialect of a savage tribe is as valuable as Sanskrit

or Hebrew, nay, for the solution of certain problems, more so; every one of these languages is the growth of thousands and thousands of years, the workmanship of millions and millions of human beings. If they were now preserved they might hereafter fill the most critical gaps in the history of the human race. And this is not all. The study of savage tribes has assumed a new interest of late, when the question of the exact relation of man to the rest of the animal kingdom has again roused the passions, not only of scientific inquirers, but also of the public at large. Now, what is wanted for the solution of this question is more facts and fewer theories, and these facts can only be gained by a patient study of the lowest races of mankind.

At Dr. Birch's, who gave a reception in the afternoon at his official residence, an agreeable surprise awaited the guests. A secretary of legation had just arrived from the French Embassy, bearing an official and holograph letter to Dr. Birch from the Comte de Jarnac, and a handsome jewel-box, containing the rare and exceedingly honourable decoration of the Golden Palm Branches, or, to speak more correctly, the order of "Officier de l'Instruction Publique," a decoration only conferred upon persons of the highest scientific and literary merit, and confined to ten personages only.

The Hamitic Section assembled in the evening at the rooms of the Society of Biblical Architecture, Conduit Street. The most interesting paper was "On the Place of the Lake or Sea passed by the Israelites at the Exodus," by his Excellency Prof. Brugsch, in French. The author was listened to with rapt attention as he endeavoured to demonstrate that the Hebrews did not really cross the Red Sea, but between the Bitter Lakes lying to the north of the sea. This paper will be printed.

On Friday, the 18th, the Aryan and Archæological Sections met, and in each valuable papers were read.

In the afternoon of Saturday, the Ethnological Section, under the presidency of Prof. Owen, C.B., F.R.S., Superintendent of the Natural History Collections in the British Museum, met at the rooms of the Royal Asiatic Society, where a very large attendance was gathered to hear the interesting addresses of the distinguished president.

In illustration of contributions to the physical elements of ethnology, Prof. Owen referred to the five quarto volumes of photographic illustrations, with descriptions of the various castes, outcasts, traders and artisans, soldiers, outlaws, and primitive hill tribes of Hindostan, issued by the India Office, under the editorial care of Sir John William Kaye and Dr. Forbes Watson. To Dr. Mouatt, when in the Indian service, Prof. Owen had first been indebted for the materials of a report on the natives of the Andaman Islands, published by the British Association in 1861. The language of that dwarf Nigrito race had been well studied by Mr. Homfray, and additional information had been recorded by other scientific Indian officers, as by Surgeon Francis Day and the lamented P. Stoliczka. In a brief summary of present knowledge of the Nigrito and Papuan tribes the president laid stress upon the geological and collateral evidences of their origin on land trusts related in time to recent geological changes, to a period vastly remote in relation to historical time. Their interest to the ethnologist was the retention by certain, now insulated, groups of Nigritos, of an early—he would not say primitive—condition of humanity, like those of some pre-historic races in Europe. The shell-mounds of the Andaman Islands, *e.g.*, were compared with the "kitchen-middens," on North European shores. The Nigritos of the Andamans, like those of New Guinea, waged an unmitigated, uncompromising hostility, by force and fraud, against invaders. Such disposition was comparable to that which the brute species in their wild state bear to man. These Nigritos seem to realise instinctively their fate through contact with a higher race. Since the establishment of a penal settlement in the smaller of the Andaman Islands, kindly disposed ladies have taken in hand Mincopie girls; some swam back to the larger islands, others, retained and taught to the age of puberty, were returned to their tribe. They forthwith resumed its condition and cast off their garments. The men girt the abdomen, against pangs of hunger, with a flexible tendril; but in other respects these dwarf Nigritos exhibit quite a prelapsarian, or quadrumanous, unconsciousness

of nakedness. After touching upon previous hypotheses that had been broached of the origin of Hill-men, Mincopies, and Papuans, the president summarised the observations on which he founded a recommendation to ethnologists to pause before concluding that the present disposition of land and sea was necessarily associated with the origin of such low forms of humanity, and to admit the possibility, if not probability, of its contemporaneity with the latest geological changes on the earth's surface. Prof. Owen then passed to the consideration of the origin, antiquity, and race-characters of the first scientifically known civilised people. This part of the discourse was illustrated by a diagram of the dynasties and reigns of Egyptian kings, and enlarged views from photographs of portrait-sculptures of individuals of the third and fourth dynasties, of a Hykshos Pharaoh of the sixteenth dynasty: of a monarch of the twentieth dynasty, belonging to the native race, after the expulsion of the "Shepherd Kings," and of Pharaohs of the Greek race, including one of Cleopatra, which, from the circumstances of its discovery, supported the belief of its being a true likeness of that queen. To ethnologists the greatest interest was attached to the evidences of the physiognomies of the race that founded the civilisation of ancient Egypt. They are supplied by statues of eminent individuals of well-to-do families, discovered in the temples connected with the tombs. Some are of wood, some of alabaster, some of granite; but the noblest of these is the statue of Chephren, the Phra, or Pharaoh of the fourth dynasty, who built the second of the great pyramids of Ghizeh. It was discovered by Mariette Bey in the temple contiguous to that mighty organised cairn or tomb. It is of life-size; the Pharaoh is seated on his throne, carved out of one block of the beautiful, intractable, and rare mineral called "diorite." Photographs of this statue were exhibited. The face, with features as refined and intellectual as those of a modern European, has a calm, dignified expression, free from the conventionality of the statues of later monarchs. The anatomy of the frame was as true as in works of art from the chisel of Michael Angelo. According to the "table" exhibited, this king lived B.C. 4200. The sculptor wrought thirty-seven centuries before Phidias. What was the period of incubation necessary to attain such perfection in both the creative and mechanical departments of the noblest of the arts? Prof. Owen then briefly discussed the evidence for this high antiquity. To the most philosophic and knowledge-loving of the kings of the Greek dynasty we owe the translation into Greek of the records written in the language, and entrusted to the care of the respective priesthoods of Egypt and of Judaea. Between these records there was great discrepancy. Egypt had risen from a long mythical period to become a state ruled by one mortal Phra, or king, at a period, according to Manetho, contemporaneous, according to Esdras, with the Creation! A later Pharaoh, Cheops, was, according to the Egyptian chronicle, building his pyramid at a time when, according to the Hebrew reckoning, the world was being submerged by the Flood. The attitude of the ethnologist, in the presence of the Manethonian and Septuagint documents, was plain; he has to put away any partiality towards one or other of the respective authors; any presumption of the superior claims of either to recognition; and to test them by facts open to discovery, and on which the truth-getting faculty can base scientific conclusions. This attitude in reference to the Hebrew record is taken by the "Palestine Exploration Fund." A like investigation of the remains of edifices, works of art, monumental records akin to the "Moabite Stone," geological and zoological phenomena, had been carried on in Egypt for a longer period and with richer results than elsewhere. Among the labourers in this monumental field the president more especially paid tribute to Lepsius and Mariette Bey. The testimonies bearing on Manetho's chronology were then briefly enumerated. From these the president inferred that if the Sebennyte priest had erred it was by omission rather than commission; and he expressed his conviction that the chronology set forth in the diagram best squared with the sum of scientific evidence on this important question. In the present palaeontological evidence of the antiquity of the human race, 7,000 years seemed but a brief period to be allotted to the earliest civilised administratively-governed community; it seemed natural that such conditions should first have arisen in a land with such unique blessedness of soil and climate as Egypt; and with the high racial character of the people flourishing under its antediluvian Pharaohs. The question as to the origin of this race was then discussed; followed by remarks on the evidence of the periods required for the origin of the leading varieties of the human species. Some remarks on the evidences of the relative

antiquity of Egyptian and Chaldean civilisation followed; and the president concluded by appealing to his fellow Orientalists to cast aside prepossessions as to time, place, affinity, race, for which there may not be any groundwork of rightly observed well-determined data, and to bring to bear on the dark vistas of the past the pure, dry light of science.

Dr. Forbes Watson, M.A., read a most important scientific paper "On the establishment, in connection with the India Museum and Library, of an Indian Institute for Lecture, Inquiry, and Teaching, and on its Influence on the Promotion of Oriental Studies in England, on the Progress of Higher Education among the Natives of India, and on the Training of Candidates for the Civil Service of India."

The India Museum and Library, Dr. Watson said, would afford a most suitable nucleus for the organisation of a centre for Indian research and information. Such a purpose would be best effected by establishing in connection with the museum and library an institute for lecture, inquiry, and teaching on all Indian subjects. Such an institute would prove highly advantageous from every point of view. The chief object of all scientific institutions is the promotion of research and the dissemination of information—the increase of knowledge, and the increase in the number of people possessed of it. In either direction these institutions would prove more effective if combined than if separate. It is clear that the public usefulness of the museum and library would be extended by the lectures and teaching of the institute; and that the action of the institute on the other hand would be supplemented by its connection with the museum and library.

The following is the plan of arrangement for an Indian Museum which would divide the whole of its contents into a series of groups and sub-groups affording a connected view of the country and its people. This plan takes account of the library as well; in fact, with regard to some of the divisions, reference must be made to the library for a large portion of the materials, and with regard to others for the whole of them.

- | | |
|---|---|
| <p>A. THE COUNTRY AND ITS RESOURCES.</p> <p>1. <i>Physical Geography.</i></p> <p>a. Boundaries and Administrative divisions.</p> <p>b. Orography.</p> <p>c. Hydrography.</p> <p>d. Meteorology.</p> <p>2. <i>Natural History.</i></p> <p>a. Geology and Mineralogy.</p> <p>b. Soil.</p> <p>c. Flora.</p> <p>d. Fauna.</p> <p>3. <i>Agriculture, Manufactures, and Commerce.</i></p> <p>a. Raw produce, mining agriculture, forestry, &c.</p> <p>b. Trade and manufactures.</p> <p>c. Tools, machinery, processes.</p> <p>d. Locomotion by land and water.</p> <p>e. Harbours, lighthouses, docks, warehouses, fairs and markets, telegraph and postal communications.</p> <p>f. Currency, banks, &c.</p> <p>g. Coins, weights, and measures.</p> | <p>B. THE PEOPLE AND THEIR MORAL AND MATERIAL CONDITION.</p> <p>4. <i>Ethnography.</i></p> <p>a. Races.</p> <p>b. Castes and religious sects.</p> <p>c. Population and vital statistics.</p> <p>5. <i>History and Administration.</i></p> <p>a. Philology.</p> <p>b. Archæology.</p> <p>c. Mythology.</p> <p>d. Historical Geography.</p> <p>e. Political and Administrative History.</p> <p>f. Legislation.</p> <p>g. Current Administration.</p> <p>6. <i>Domestic and Social Economy.</i></p> <p>a. Food and cooking.</p> <p>b. Houses and buildings.</p> <p>c. Clothing and personal decoration.</p> <p>d. Manners and customs.</p> <p>e. Health and sanitation.</p> <p>f. Education.</p> <p>g. Religion.</p> <p>h. Fine and decorative art.</p> <p>i. Science and literature.</p> |
|---|---|

Several other papers were taken as read, and the session of the Congress ended with the choice of St. Petersburg for the meeting of the Congress of 1875. In the evening the Lord Mayor entertained the members at a magnificent banquet at the Mansion House.